

AMENDMENT(S) TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims on the application. All claims are set forth below with one of the following annotations.

- (Original): Claim filed with the application.
 - (Currently amended): Claim being amended in the current amendment paper.
 - (Canceled): Claim cancelled or deleted from the application. No claim text is shown.
 - (Withdrawn): Claim still in the application, but in a non-elected status.
 - (New): Claim being added in the current amendment paper.
 - (Previously presented): Claim added or amended in an earlier amendment paper.
 - (Not entered): Claim presented in a previous amendment, but not entered or whose entry status unknown. No claim text is shown.
1. (Currently amended) In a system ~~including~~ included in a pointing device, the system having an inactive state and an on state, apparatus including:
- a set of at least one sensor associated with the pointing device, each sensor being one of a proximity sensor, a touch sensor operative to detect whether the pointing device is touching an active area, or a button sensor operative to detect whether a button is pressed by a user;
 - an on-off circuit coupled to the set of sensors and responsive to a triggering event involving any of those sensors;
 - a regulator coupled to the on-off circuit, responsive to a signal from the on-off circuit, and capable of being turned on or off in response to that signal; and
 - an operational circuit coupled to the set of at least one sensor and to the regulator, the operational circuit being responsive to whether the regulator is on or off, wherein the operational circuit can determine which one or more of the set of sensors is involved in any such triggering event;
- wherein each sensor of the set of at least one sensor includes a passive switch coupled to a corresponding resistor and a power source, such that for each particular sensor, no power is consumed by the particular sensor and its corresponding resistor unless there is a triggering event for the particular sensor, and such that as a result of a triggering event for the particular sensor, there is a current flowing through the corresponding resistor.

wherein for each particular sensor, a sensor signal indicative of a voltage drop across the resistor corresponding to the particular sensor coupled to the operational circuit operative to indicate that there has been a triggering event, and

wherein the system consumes substantially no power in its inactive state and operates normally in its on state.

2. (Original) Apparatus as in claim 1, wherein at least one of the following circuits consumes no more than about 1.5 microamp when the regulator is in its inactive state: the on-off circuit, the regulator, the operational circuit.

3. (Cancelled).

4. (Cancelled).

5. (Previously presented) Apparatus as in claim 1, wherein the on-off circuit includes:
 - a bias element coupled to the set of sensors and providing substantially less than the full power output of the regulator;
 - each sensor of the set of sensors being coupled to a distinguishable input of the operating circuit; and
 - a switch coupled to the bias element, responsive to such a triggering event, and generating a signal from each of the sensors to the operating circuit.
6. (Original) Apparatus as in claim 1, wherein the on-off circuit is responsive to a turn-off signal from the operational circuit, and capable of being turned off in response to that turn-off signal.
7. (Original) Apparatus as in claim 1, wherein the system includes a shut-down state, the system entering the shut-down state in response to the operational circuit having detected one of the sensors having been associated with such a triggering event for at least a known time duration.
8. (Previously presented) Apparatus as in claim 1, wherein the system includes an idle state, the system entering the idle state in response to the operational circuit having detected none of the set of one or more sensors having been associated with such a triggering event for a known time duration.
9. (Currently amended) In a system including included in a pointing device having a plurality of sensors, apparatus including:
 - a power source;
 - a regulator coupled to the power source;
 - an operational circuit coupled to the regulator;

a first sensor and a second sensor, each coupled to the operational circuit, each sensor being one of a proximity sensor, a touch sensor operative to detect whether the pointing device is touching an active area, or a button sensor operative to detect whether a button is pressed by a user; and

an on-off circuit coupled to the regulator, the first sensor, and the second sensor;
wherein

the on-off circuit has an inactive state and an active state;

the on-off circuit uses substantially no energy in its inactive state;

the on-off circuit is capable of a transition from its inactive state to its active state in response to either the first sensor or the second sensor; and

the on-off circuit is capable of distinguishing, substantially immediately upon transition from the inactive state, whether that transition was in response to the first sensor or the second sensor,

wherein each sensor includes a passive switch coupled to a corresponding resistor and the power source, such that for each particular sensor, no power is consumed by the particular sensor and its corresponding resistor unless there is a triggering event for the particular sensor, and such that as a result of a triggering event for the particular sensor, there is a current flowing through the corresponding resistor, and

wherein for each particular sensor, a sensor signal indicative of a voltage drop across the resistor corresponding to the particular sensor coupled to the operational circuit.

10. (Previously presented) Apparatus as in claim 9, wherein

the regulator has an inactive state and an active state;

the on-off circuit is capable of changing the regulator from its inactive state to its active state; and

the regulator uses substantially no energy in its inactive state.

11. (Previously presented) Apparatus as in claim 9, wherein

the on-off circuit is coupled to the operational circuit; and

the on-off circuit is responsive to a signal from the operational circuit, wherein the on-off circuit is capable of transitioning from its active state to its inactive state in response to that signal.

12. (Previously presented) Apparatus as in claim 9, wherein the on-off circuit is coupled to the power source.

13. (Currently amended) A method operative in ~~In~~ a system including included in a pointing device having a set of one or more sensors, ~~a method of operating that system;~~ the method including the steps of:

receiving a relatively low voltage [V_{bias}], the relatively low voltage being substantially less than a normal regulated voltage [V_{cc}], but being sufficient to generate current in response to a triggering event involving any one or more of a plurality of sensors, each sensor being one of a proximity sensor, a touch sensor operative to detect whether the pointing device is touching an active area, or a button sensor operative to detect whether a button is pressed by a user, each particular sensor including a passive switch coupled to a corresponding resistor and a power source of the relatively low voltage, such that for each particular sensor, no power is consumed by the particular sensor and its corresponding resistor unless there is a triggering event for the particular sensor, and such that as a result of a triggering event for the particular sensor, there is a current flowing through the corresponding resistor;

responsive to such a triggering event, generating a normal regulated voltage;

coupling each of the sensors to an operating circuit by a coupling of the resistor corresponding to the sensor to the operational circuit, the coupling operative to detect a voltage drop across the resistor corresponding to the sensor, whereby ~~such that~~ the operating circuit generates, in response to the normal regulated voltage, a signal indicative of which sensor was involved in the triggering event.

14. (Original) A method as in claim 13, wherein the steps of generating include steps of
- altering a state of a switch in response to the triggering event; and
- completing a circuit including that relatively low voltage and that switch, whereby a regulator receives a turn-on signal.
15. (Original) A method as in claim 13, wherein the steps of receiving include steps of coupling a bias element from a power source to an output of a regulator while that regulator is off.
16. (Currently amended) A method as in claim 13, whereby the steps of coupling includes ~~include~~ steps of:
- coupling each of the sensors between the power source of the relatively low voltage and a the corresponding resistor;
- coupling each of the corresponding resistors to a common node, whereby ~~such that~~ the triggering event presents at least some current to the common node;
- altering a state of a switch in response to that current, whereby that current presents a detectable voltage across the one resistor corresponding to which sensor was involved in the triggering event.

17. (Currently amended) In a system ~~including~~ included in a pointing device having a set of one or more sensors, a circuit including:

a relatively low voltage $[V_{bias}]$, the relatively low voltage being substantially less than a normal regulated voltage $[V_{cc}]$, whereby an operational circuit consumes substantially no power in response to the relatively low voltage $[V_{bias}]$;

wherein each of the set of one or more sensors is coupled to the relatively low voltage $[V_{bias}]$ and is coupled to an identifiable resistive element, whereby the relatively low voltage $[V_{bias}]$ generates a turn-on current through one of the identifiable resistive elements in response to a triggering event involving any of the set of one or more sensors, each sensor being one of a proximity sensor, a touch sensor operative to detect whether the pointing device is touching an active area, or a button sensor operative to detect whether a button is pressed by a user;

a regulator coupled to that turn-on current, the regulator being responsive to that turn-on current to turn on and provide the normal regulated voltage $[V_{cc}]$;

coupling each of the identifiable resistive elements to an operating circuit, whereby the operating circuit generates, in response to the normal regulated voltage, a signal indicative of which sensor was involved in the triggering event;

wherein each sensor includes a corresponding on-off switch such that the combination of the sensor and its corresponding resistor consumes no power unless the sensor is triggered.

18. (Original) A circuit as in claim 17, wherein the relatively low voltage $[V_{bias}]$ has the effect of providing a current of about 0.5 microamps when none of the sensors are triggered.

19. (Currently amended) In a system ~~including~~ included in a pointing device having a set of at least one sensor, a circuit including:

a power source;

a bias element;

a switch corresponding to each sensor, the switch being closed when the sensor is triggered and open when the sensor is not triggered, each sensor being one of a proximity sensor, a touch sensor operative to detect whether the pointing device is touching an active area, or a button sensor operative to detect whether a button is pressed by a user;

a resistive element corresponding to each such switch;

an operational circuit coupled to each such resistive element;

a node coupled to a plurality of those resistive elements; and

an on-off element responsive to a voltage at that node;

whereby the on-off element is responsive to any of the sensors being triggered, and a voltage drop across an identifiable one of the resistive elements allowing the the operational circuit to generate a signal indicative of which one of the sensors was triggered,

wherein each sensor includes a corresponding on-off switch such that the combination of the sensor and its corresponding resistor consumes no power unless the sensor is triggered.

20. (Previously presented) Apparatus as in claim 1, wherein the set includes more than one sensor.
21. (Previously presented) Apparatus as in claim 1, wherein the pointing device is a non-marking pointing device.
22. (Previously presented) Apparatus as in claim 1, wherein the pointing device is a marking pointing device.
23. (Previously presented) A method as in claim 13, wherein the set includes more than one sensor.
24. (Previously presented) A circuit as in claim 17, wherein the set includes more than one sensor.
25. (Previously presented) A circuit as in claim 19, wherein the set includes more than one sensor.